DETAILED ACTION

This office action is in response to the amendment of July 2, 2009. In making the below rejections and/or objections the examiner has considered and addressed each of the applicant's arguments.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims, and notably the independent claims 10 and 19, have been amended to set forth that the valve is "non-hinged" and to set forth that the valve will "pneumatically float". These recitations do not appear in the description as originally filed and the valves as shown in the drawings do not teach such an arrangement as commonly understood. With regards to the term "non-hinged" the term "hinged" is defined in The American Heritage Dictionary, Second College Edition as "a jointed or flexible device that allows the turning or pivoting of a part". It is unclear from the disclosure if the diaphragm extends and retracts between the pump chamber

and the pump head or if it is tightly clamped. But in either case the above definition of "hinge" agrees with what is shown in the current disclosure. Therefore a "non-hinged" valve was not originally disclosed and is new matter. With regards to the limitation of allowing the valve to “pneumatically float” this term also was not in the original disclosure. The drawings do not shown a valve where there is enough room for the whole valve to pneumatically float. The examiner takes this term to mean that there is enough room between the valve and the surrounding valve chamber to allow the whole valve to move. This does not seem to be the case in the current drawings. The examiner notes that if this was the case in Fig. 7 the outer ends of the valve would have bent upwards in the drawing against the top piece 110’ and this is not the case. Suggesting that the valve is securely clamped between the two pieces 110 and 112.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10-18 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat.

App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 9, 10, 11, 12 and 18 recite the broad recitations of a range, such as "…are selected to limit the stroke length of the first valve element to less than about 1.6 times the first thickness" (cl. 10, last line), and the claims also recite a narrower range within the larger range, such as "*about* 1.6", where "about" is the narrower statement of the range/limitation. Throughout the noted claims the recitation of "*about …*" creates a second range within the larger range and makes unclear the intended range being set forth as a limitation of the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 4, 10-13, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bolt (USPN 5,785,508) in view of Pelmulder et al (USPN 4,712,583).

Bolt discloses a pump assembly having first and second inlet band discharge valves clearly shown in Fig. 1. There is a pump head 8 having a first recess and a pump head 9 having a second recess. The recesses cooperate together to form a valve pocket. Bolt discloses an elastomeric (col. 3 lines 48 and 49) flexible valve member. As shown in Fig. 2 the dimensions of the valve compartment are such that the travel of the

valve will be a distance which is very similar to the thickness of the valve. Fig. 3 also discloses a projection extending from the upper surface of the compartment which is intended to limit the travel. Bolt does not set forth that the stroke length is less than 1.6 times the valve thickness or ranged from about 0.19 to about 0.93 times the thickness of the valve element. Bolt also does not disclose that the flexible valve element is retained at opposed ends by the pump chamber and the pump head to allow a central portion of the first valve element to symmetrically deflect into valve pocket. Pelmulder discloses a flexible valve element 20 having a central portion which pneumatically floats. The outer circumferential portion is clamped between the pump chamber 42 and a pump head 44. Therefore opposed ends of the valve (see Fig. 1) would be retained and allow the center portion to symmetrically deflect. While the specification does not specifically state the stroke length/valve compartment dimensions, the drawings show that the largest possible stroke of the valve is less than about 1.5 times the maximum thickness of the valve 20 central portion. At the time of the invention it would have been obvious to one of ordinary skill in the art to substitute a valve such as disclosed by Pelmulder et al for the valves of Bolt as such a substitution would provide valves which operate with small forward pressure and are inexpensive (note the Abstract). With regards to the specific recitation of the stroke length and chamber dimensions, since the general conditions of the claimed invention are disclosed in the prior art, the examiner takes the position that the claimed numerical values are merely an optimum or workable range which involves only routine skill in the art. Hence, it would have been obvious to one of ordinary skill in the art at the time of the invention to limit the stroke length of the valve elements by to

conducting multiple experiments using different flexible materials with different stroke lengths to deduce the optimum or workable range for the stroke length.

Claims 5-9 and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bolt in view of Pelmulder et al as applied to claims 10 and 19 above, and further in view of Brand et al and Knox et al.

As set forth above Bolt in view of Pelmulder et al discloses the invention substantially as claimed but does not disclose the material the valve elements are made out of. However, the reference of Brand et al, which is directed to a check valve assembly, and the reference of Know et al, which is directed to a diaphragm, disclose that the valve element could be constructed from an elastomer such as ethylene propylene diene terpolymer (diene side chain), fluoroelastomer, perfluoroelastomer, and silicone. See Brand et al col. lines 28-35 and Knox et al col. 1 lines 50-60, col. 4 lines 61 to col. 5 line 6 and col. 11 claim 2. At the time of the invention it would have been obvious to one of ordinary skill in the art to have made the valve elements from the elastomers taught in Brand et al and Knox et al to provide a durable flexible material for the valve.

Regarding claims 9 and 18, Brand et al teaches in the disclosure that the valve elements have a durometer hardness from about 30 to 100 on the Shore A scale, which covers the claimed range. See Brand et al col. 3 lines 35-40.

Response to Arguments

Applicant's arguments with respect to claims 3-20 have been considered but are moot in view of the new ground(s) of rejection.

The examiner notes that the rejection has not been made final due to the inclusion of the rejections set forth under 35 USC 112, 2nd paragraph above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles G. Freay whose telephone number is 571-272-4827. The examiner can normally be reached on Monday through Friday 8:30 A.M. to 5:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Charles G Freay/
Primary Examiner
Art Unit 3746

CGF
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